

# Software Testing and Validation – 2017/18

Instituto Superior Técnico

## *Vos* – Project Report

Group 01 – Alameda

Francisca Cambra  
ist181057

Rui Ventura  
ist181045

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## 1 Method-Scope Tests

### 1.1 assignPhoneNumber

Assigns a free phone number to a client of *Vos* if all conditions are met. If at least one of these conditions does not hold, then this method does not change anything and throws the `InvalidOperationException` exception.

- **Test Pattern**

- Category-partition

- **Functions**

- Primary function

- \* Assign free phone number to a client without a number

- Secondary functions

- \* Throw `InvalidOperationException` if conditions aren't met
      - Invalid nif ( $\text{nif} \notin [10^8, 10^9 - 1]$ )
      - Invalid phone number ( $\text{number} \notin [10^8, 10^9 - 1]$ )
      - Client doesn't exist (valid nif)
      - Assign a previously assigned number to a client
      - Assign a number to a client that already has said number

- **I/O Parameters**

- Input

- \* `clientNif` – The nif of the client to assign a number to
    - \* `phoneNumber` – The phone number to be assigned
    - \* `clients` – The set of *Vos* clients managed by `ClientManager`

- Output

- \* `client` – The updated client, if a number was assigned successfully

- Categories & Choices

Parameter	Category	Choices
clientNif	Vos client	$\#numbers \in [1, 5[$
		$\#numbers = 5$ (MAX)
	Special cases	$client_{nif}^1 \notin clients$
		$clientNif \notin [10^8, 10^9 - 1[$
phoneNumber	Vos phone number	Free (Unassigned)
		Not free (Assigned)
	Invalid number	$phoneNumber \notin [10^8, 10^9 - 1]$
clients	n-elements	$n = 0$ (Empty)
		$n \in [1, MAX]$ (Not empty)

- Constraints

- Empty `clients` list precludes the possibility of assigning a `phoneNumber`

- Test Cases

Choices				Expected Result	
#	clientNif	phoneNumber	clients	Exception	client
1	$\#numbers \in [1, 5[$	Free	$n \in [1, MAX]$	NO	$\#numbers \in ]1, 5]$
2	$\#numbers \in [1, 5[$	Not free	$n \in [1, MAX]$	YES	—
3	$\#numbers \in [1, 5[$	$\notin [10^8, 10^9 - 1]$	$n \in [1, MAX]$	YES	—
4	$\#numbers = 5$	Free	$n \in [1, MAX]$	YES	—
5	$\#numbers = 5$	Not free	$n \in [1, MAX]$	YES	—
6	$\#numbers = 5$	$\notin [10^8, 10^9 - 1]$	$n \in [1, MAX]$	YES	—
7	$client_{nif} \notin clients$	Free	$n \in [1, MAX]$	YES	—
8	$client_{nif} \notin clients$	Not free	$n \in [1, MAX]$	YES	—
9	$client_{nif} \notin clients$	$\notin [10^8, 10^9 - 1]$	$n \in [1, MAX]$	YES	—
10	$\notin [10^8, 10^9 - 1]$	Free	$n \in [1, MAX]$	YES	—
11	$\notin [10^8, 10^9 - 1]$	Not free	$n \in [1, MAX]$	YES	—
12	$\notin [10^8, 10^9 - 1]$	$\notin [10^8, 10^9 - 1]$	$n \in [1, MAX]$	YES	—

## 1.2 computeBill method

## 2 Class-Scope Tests

### 2.1 Client class

### 2.2 Mobile class

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<sup>1</sup>A client whose nif is `clientNif`, not `clientNif` itself.